

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925	
June 23	Independent Force (R.A.F.) Re-Union Dinner, R.A.F. Club, 7.45 p.m.
June 25	Aero Golfing Soc. Match, Mid-Surrey.
June 27	Royal Air Force Pageant, Hendon.
June 27	R.A.F. Iraq Dinner, Holborn Restaurant, at 8.15 p.m.
July 8-4	King's Cup Race.
July 26-Aug. 9	Vauville Light 'Plane and Glider Meeting.
Aug. 1-3	Royal Aero Club Race Meeting at Lympne.
Sept. 19-28	F.I.A. Conference at Prague.
Oct. 8	Aero Golfing Soc. Autumn Meeting, Walton Heath.
Oct. 24-29	Schneider Cup Race, Baltimore, U.S.A.
1926	
Aug.	Light Aeroplane Competition.

EDITORIAL COMMENT.



Egypt to India

At long last it appears that real progress with air services is about to be made. For several years "FLIGHT" has persistently advocated the extension of existing air lines for the reason that most of the present routes are over too short distances to be of any real value except as full scale experiments for gaining experience. That experience has been accumulated on the London-Paris, London-Cologne and other routes, and frankly we doubt if very much more can be learned from operating these routes. The experience gained should, however, be of the very greatest value when the time comes to extend the routes to more distant parts of the Empire. According to the statement made by Sir Samuel Hoare in the House of Commons on June 11, in reply to Sir Frederick Sykes, the Government have approved in principle the institution of a civil air service between Egypt and India, which will replace the present fortnightly service carried out by the R.A.F. between Egypt and Iraq.

We are extremely pleased to note that the Air Minister regards the matter as one of considerable urgency, and that he said that a concrete scheme was now under consideration, while several aviation undertakings had been invited to submit early proposals for such a service. It should be underlined that Sir Samuel used the term "had been invited" and not "were to be invited," so that it would seem that the machinery is already set in motion. When the Government decided to revive British airship work, and when hints were thrown out of great plans for the future, often, we fear, of an unduly optimistic character, there were those who feared that in the enthusiasm for airships sight might be lost of the possibilities of heavier-than-air craft. Sir Samuel's statement in the House the other day definitely allays that fear, and it is quite obvious that he and his colleagues do not intend to wait for the somewhat protracted airship experiments to

prove a success before carrying on with aircraft whose capabilities are well known.

As far as the proposed air route is concerned, the section between Egypt and Basra is already more or less in working order as a result of the fortnightly air mail service operated by the R.A.F., but the extension from Basra to Karachi is rather more of an experiment, and it should be recollected that before this extension can be operated satisfactorily it will be necessary to obtain the goodwill of the Persian authorities. Not that there is any reason to doubt that all reasonable facilities will be given by the Persian Government, but it must be realised that no matter how helpful a foreign Government may be, the operation of an air service along a foreign coast can never be quite the same as that of one lying over British territory. Apart from political difficulties this stretch of the route, or at any rate a considerable portion of it, is very difficult geographically, as those of our readers will realise who remember Mr. Cobham's article on his and Sir Sefton Brancker's flight to India. Some photographs taken from Cobham's De Havilland showed typical country along the Persian Gulf, and certainly did not appear to offer many places suitable for forced landings. It is therefore fairly obvious that very reliable machines will have to be used over that portion of the route, and although the Air Minister did not refer to the equipment to be employed, it seems probable that the new three-engined types now being developed, and from which practical immunity from forced landings is expected, will be called into service for this section of the route. The three-engined type should also facilitate very considerably the problems of night flying which, if successfully solved, should very nearly double the value of any such air service.

So long as flying by day only is possible, aircraft have to be capable of a fairly high top speed in order to give an effective saving in time, and in point of fact an airship travelling throughout the 24 hours at some 70 m.p.h. will cover over long routes as great distances as aeroplanes travelling at about 120 m.p.h. by day only. This in itself is a very strong argument in favour of developing night flying at the earliest possible opportunity. If and when the new service comes into operation it should save something like four or five days on the journey to India, which saving would be very materially increased if night flying were feasible.

While the suggested air service is undoubtedly a step in the right direction sight should not be lost of the fact that an even greater saving in time could be effected were it possible to cover the whole distance from London to Karachi by air. We know, of course, that technically this is possible, as has been shown repeatedly, but there are certain political difficulties in the way, and as a matter of fact, unpalatable though the truth may be, Great Britain is not very favourably situated in this respect, since air services of any length cannot be operated from London without the goodwill and co-operation of foreign Powers. It seems, therefore, doubtful if it will be easy to arrange for such services beyond Paris for instance, the more so as the French are

anxious to start their own air service to the east, and it is more than possible that considerably more rapid progress would be made if we were to make up our minds to work in close co-operation with France so as to link up Paris and some point on the trans-desert route by air. We believe that France is more than willing to co-operate with us in some such scheme, and while waiting for the development of airships to make an "all red" route to the east possible, we might with advantage co-operate with France to the extent of sending our Indian mails by French air lines from Paris to Syria. We have no doubt that both Sir Samuel Hoare and Sir Sefton Brancker fully realise these possibilities and that if it is at all possible to come to an agreement with France in this matter the authorities will do all they can.

♦ ♦ ♦

I.Ae.E.
Say
"No"

As reported elsewhere in this issue of FLIGHT, members of the Institution of Aeronautical Engineers vetoed, at an extraordinary meeting held last week, the suggestion that they should amalgamate with the Royal Aeronautical Society. The majority voting against the amalgamation over those in favour of it was not, it is true, an overwhelming one, but it was sufficient to carry the day.

While we fully realise the very great difficulties under which the Institution has been working, we must confess that upon the whole it was as well that it was decided not to carry through the amalgamation. As several of the speakers pointed out, the two societies are of an entirely different character, and there is, or should be, room for both without any overlapping. The Royal Aeronautical Society has developed as the scientific society dealing with aeronautics, and as such has its own particular sphere of usefulness. The Institution of Aeronautical Engineers, on the other hand, has, ever since its formation, appealed more to the practical engineer, and as there is no indication that the gulf between the scientist and the engineer shows any signs of lessening, while the Royal Aeronautical Society appears to consider it outside its scope to deal very much with the practical every-day conditions of aeronautical engineering, we think it is most essential that there should be in existence a body which looks after this very important branch.

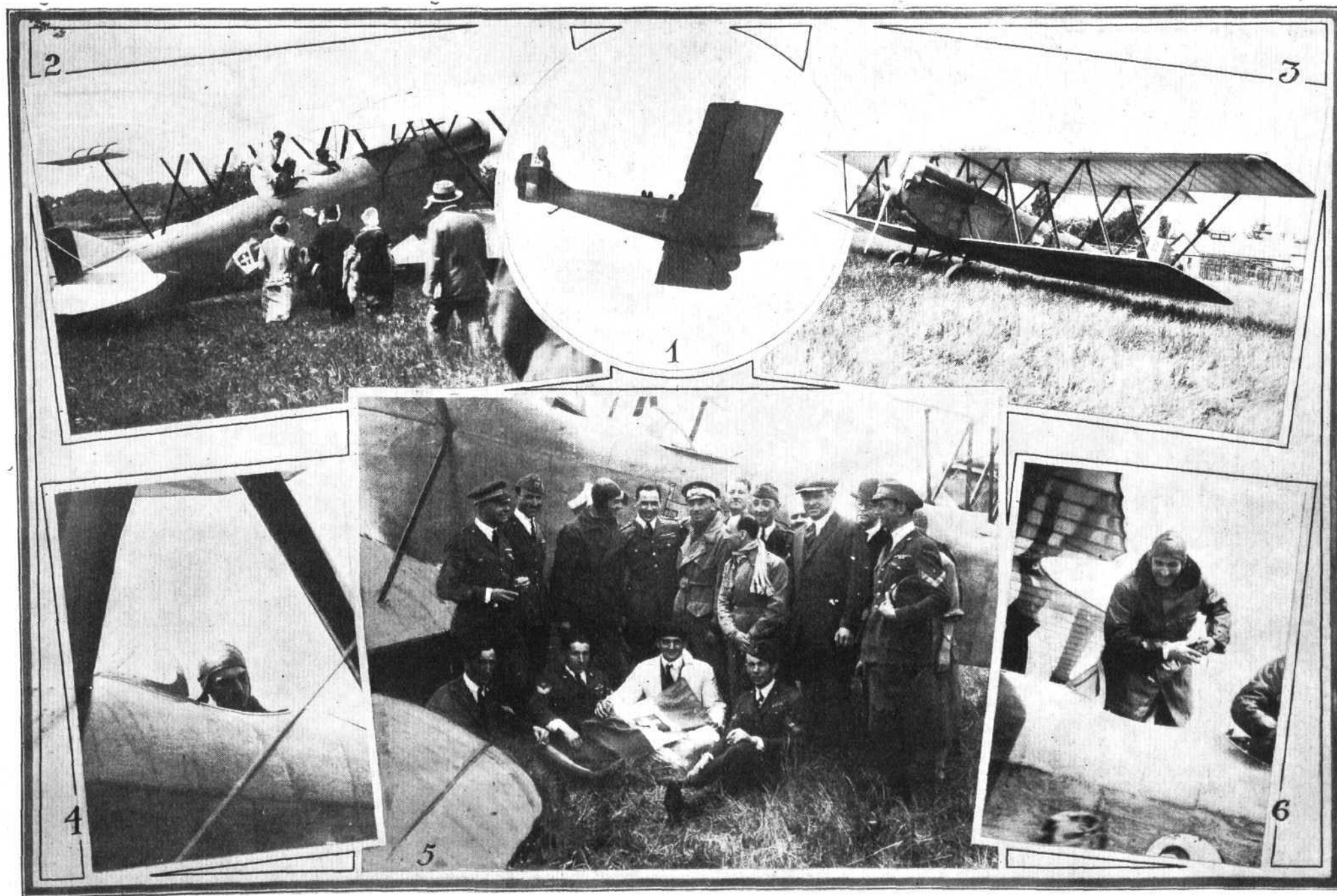
The main difficulties in connection with the Institution has been a question of finance, and it appears that the greatest item on the expenses side has been that of publishing the Minutes of the Institution's proceedings. As the Hon. Secretary very rightly pointed out, it would be unwise to attempt to abolish this publication altogether, since many members reside abroad and cannot attend meetings. We do, however, think that means may be found for solving this difficulty and in point of fact, if publication of fairly extensive summaries in FLIGHT of the various papers read would help the Institution to place it on a firm foundation, we should be very willing to enter into details with the hope of bringing about such a result.



An Air Yacht for Mr. H. Vanderbilt

A LUXURIOUS "air yacht" has just been completed at Long Island, N.Y., for Mr. Harold Vanderbilt, for pleasure purposes. It has been designed by Mr. C. B. Kirkham, and is a flying boat, constructed mainly of duralumin, fitted with a

450 h.p. Napier "Lion" engine. The wing roots, near the hull, have a sharp dihedral, and then extend outwards horizontally. A special cabin is provided in which noise from the engine is deadened considerably. During tests it is stated that this machine attained a speed of 160 m.p.h.



THE ITALIAN AIR VISIT TO CROYDON (see page 368): 1. One of the machines arriving at Croydon. 2. The pilot and crew of one of the four machines being greeted by their Italian compatriots (complete with flag) on landing. 3. The Fiat B.R.1 long-distance day bomber, 700 h.p. Fiat engine. 4. The pilot of No. 1 machine, Capt. Ferrarin. 5. A group of some of the Italian airmen, R.A.F. officers and friends. Included in the group are Capts. Brack-Papa, Ferrarin, and Major S. Scaroni (without hat), Italian Air Attaché. 6. Capt. Brack-Papa.

THE ITALIAN AIR VISIT TO ENGLAND

ON Tuesday last this country was honoured by an aerial visit by five well-known officers of the Italian Air Service, together with about six other ranks of the same service. For some time past these officers have been engaged on an extensive aerial tour to various countries, "showing the Italian flag," and have already visited several Continental cities, including Paris and Brussels. The expedition includes such well-known names as Capts. Ferrarin, Brack-Papa, Casinelli and Lieuts. Bertolini and Gamma. Capt. Ferrarin, it will be remembered, accomplished a magnificent flight, in a Spa-engined S.V.A. biplane, from Rome to Tokio in 1920 (February 14 to May 31). Capt. Brack-Papa is another crack Italian pilot, whose name will be familiar to readers of *FLIGHT* in connection with many record-breaking flights.

These officers are flying in four Fiat long-distance day bombers, type B.R.1, fitted with 700 h.p. Fiat engines. The Fiat B.R.1, as may be seen from one of the accompanying illustrations, is an interesting and distinctive type of machine—a tractor fuselage biplane with Warren interplane strut bracing. An early model of the B.R. type was described in *FLIGHT* for May 15, 1924, the model employed in the "Show the Flag" tour differing in minor improved details—such as the divided landing chassis, which enables large bombs or torpedoes being carried.

On the occasion of their visit to England on Tuesday the Italian airmen flew from Brussels to Croydon, where a small but enthusiastic gathering—mainly Italian—waited patiently for several hours in the hot sun in order to give them an equally warm welcome. Before their arrival three Gloucestershire "Grebes" flew over from Kenley, then shortly after 12 o'clock the first Italian machine—No. 1 piloted, we believe, by Ferrarin—came into sight and, having circled the aerodrome, made a neat landing amid cries of "Viva Italia," etc. While the occupants of the first machine were receiving congratulations, the second machine (piloted by Brack-Papa) landed, followed at short intervals by the remaining two machines.

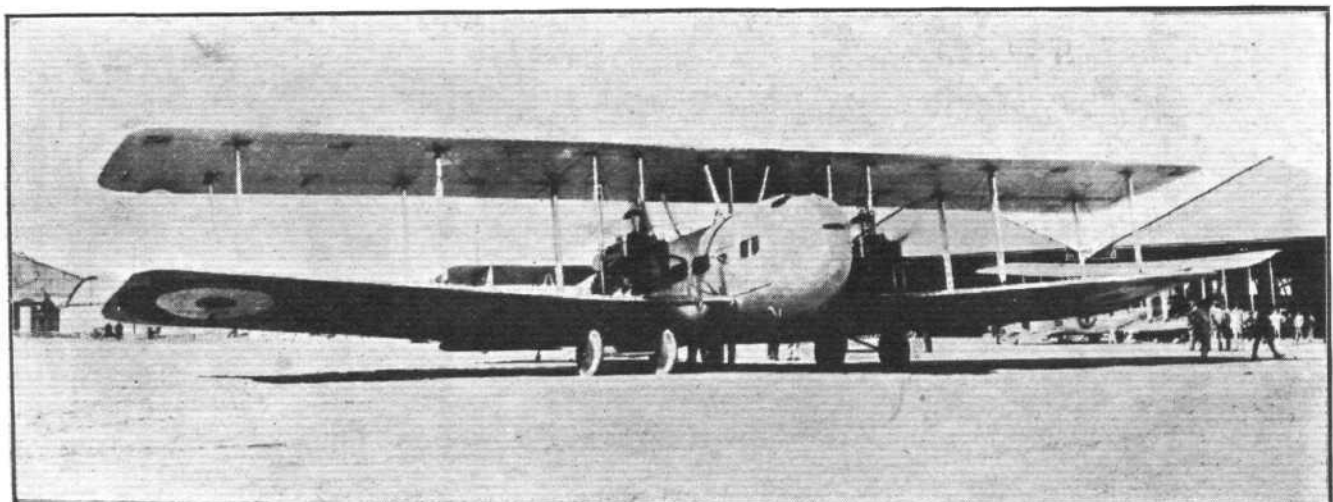
The airmen were officially received by the Italian Air Attaché, Major Silvio Scaroni, on behalf of the Italian Ambassador, who was unable to be present. After telling the Customs officials they "had nothing to declare" the airmen were escorted to the "Trust House" for a short rest and some light refreshment. They then returned to their machines once more, and at 1 p.m. the "Grebes," having first ascended to lead the way, the four B.R.1's took off one after the other and left for Kenley, where they were to receive an official welcome from the R.A.F.

We show on the previous page some photographs taken during Tuesday's visit to Croydon.

THE KING'S CUP RACE

The following are the entrants for the King's Cup Race, taking place at Croydon, on July 3-4:—

Entrant.	Aircraft.	Engine.	Pilot.
A. S. Butler	D.H. 37	Rolls Royce "Falcon" 280 h.p.	Major H. Hemming, M.C.
A. V. Roe	Avro 504N.	Armstrong-Siddeley "Lynx" 180 h.p.	B. Hinkler.
Sir G. Stanley White, Bart.	"Bristol" Bloodhound	"Bristol" Jupiter 400 h.p.	T. W. Campbell.
Major F. M. Green	Siskin V.	Armstrong-Siddeley "Jaguar" 395 h.p.	Capt. J. L. N. B. Baggs.
Sir Glynn Hamilton West	Siskin IV.	Armstrong-Siddeley "Jaguar" 395 h.p.	Flight-Lieut. H. W. G. Jones, M.C.
J. D. Siddeley, C.B.E.	Ajax	Armstrong-Siddeley "Jaguar" 395 h.p.	Capt Frank Courtney.
Lieut.-Col. J. Barrett Lennard	Avro Airdisco	Airdisco 120 h.p.	H. H. Perry.
Lieut.-Col. M. O. Darby	Martinsyde A.D.C.I.	Armstrong-Siddeley "Jaguar" 395 h.p.	Squad-Leader W. H. Longton, D.F.C., A.F.C.
Sir Charles Wakefield, Bart.	D.H. 60 "Moth"	Cirrus 27/60 h.p.	Alan J. Cobham.
S. Donoghue	D.H. 51 A.	Airdisco 120 h.p.	Capt. C. D. Barnard.
Capt. G. de Havilland	D.H. 60 "Moth"	Cirrus 27/60 h.p.	Capt. G. de Havilland.
The Rt. Hon. Sir Eric Geddes, G.C.B., G.B.E.	Siskin V.	Armstrong-Siddeley "Jaguar" 395 h.p.	Capt F. L. Barnard.
Major J. C. Savage	A.N.E.C.	British Anzani 30 h.p.	J. H. James.
T. O. M. Sopwith	Hawker "Woodcock"	"Bristol" Jupiter 400 h.p.	F. P. Raynham.
Air Commodore J. G. Weir, C.M.G.	D.H. 51 A.	Airdisco 120 h.p.	Col. The Master of Sempill.



WITH THE R.A.F. IN IRAQ: We show above one of the Vickers "Victoria" aerial transports (two 450 h.p. Napier "Lion" engines) at Hinaidi aerodrome. These machines, which can carry 25 soldiers complete with equipment, in addition to the crew of two, have done excellent work, not only in transporting troops, but in conveying sick and wounded from one part of the country to another in a matter of hours as against days by other means of transport.

ON ACCIDENTAL STALLING

By M. L. BRAMSON, A.C.G.I., M.I.Ae.E.

IN a previous article on "Engine Failures and Forced Landings," one aspect of safety in flying was discussed which chiefly depends upon the power plant. It is generally accepted that accidental stalls cause an exceedingly high percentage of fatal accidents, and it is here proposed to analyse very minutely some of the circumstances which may lead to involuntary stalling, and to which insufficient attention has, perhaps, been given in the past.

Definition of Stalling.—Although the stalling point is variously looked upon as that at which an aeroplane "sinks" or "gets out of control," a machine may, in fact, stall without doing either of these things. It seems well, therefore, to define the stalling point without ambiguity. As any given machine may stall at many different speeds, depending not only on its static load, but also on the dynamic load, due to centrifugal force on a turn, or in a loop, or in flattening out after a dive, it is obviously convenient to define the stalling point in terms of the angle of incidence, thus making it constant for any given machine. Accordingly, in what follows, an aeroplane is said to stall when it reaches "the incidence of maximum lift coefficient."

Control below Stalling Speed.—Much has been written of late on the desirability of retaining control below what is termed stalling speed (in view of the preceding paragraph the phrase is vague; let us substitute "control above stalling incidence"). Undoubtedly, it would be a great step forward if we could abolish the nose-dive-into-the-ground crash, but the general impression that if that problem were solved involuntary stalls would no longer be dangerous, or even undesirable, is erroneous.

Let us consider the facts. As stalls at high altitude are of no consequence from a safety point of view, we need only consider those which occur near the ground. The picture will generally contain a failing engine, difficult country below, and a worried pilot. His ability to choose a small field in preference to, say, houses or trees to land upon, now depends entirely on his utilising every foot of altitude he has for gliding and manoeuvring. Should he unwittingly stall, even though retaining lateral and longitudinal stability, he would suddenly lose height rapidly at a steep gliding angle with no possibility of retarding the rate of descent, or of choosing his ground. It seems clear, therefore, that, though most desirable, it is not enough to render stalls less dangerous by providing control above stalling incidence. We must aim at eliminating involuntary stalls altogether.

Stalling Symptoms.—There are at present at the disposal of the pilot three ways of ascertaining an approaching stall. He can either (1) test his controls for abnormal sloppiness, or (2) make a rough estimate of his fore-and-aft level in relation to his engine revolutions, or (3) watch his air-speed indicator, or any other visual means provided for indicating an approaching stall.

The first method is, except in the case of very light and sensitive aeroplanes, most unreliable. The second method can only provide a very rough guess, and is quite inadequate. The third, which depends on an air-speed indicator, or its equivalent, is almost exclusively used when accurate flying is essential.

Let us, therefore, examine to what extent an air-speed indicator, or such-like instrument, may be relied upon to give warning of an impending stall. Let us assume that the air-speed indicator does indicate the true air speed with

sufficient accuracy, and that the stalling speed of the machine as loaded is known to the pilot. Then it is obvious that if the machine is flying at a uniform air speed anywhere above the danger-point, the air-speed indicator furnishes all the necessary information; but it can be shown that if the air speed is non-uniform, the air-speed indicator may actually supply false and dangerous information.

To illustrate the point, let us take a numerical example. Suppose that an aeroplane stalls in straight flying at a speed of 55 m.p.h. and has a total weight of 6,000 lbs., and let us suppose, further, that it has been gliding down without engine at a steady rate of 95 m.p.h., after which the pilot has for some reason slowed down to 90 m.p.h. A glance at his air-speed indicator will then give him the reassuring information that he is doing the safe speed of 90 m.p.h. The actual state of affairs may, however, be as follows:—In slowing down from 95 to 90 m.p.h. the pilot may unwittingly have flattened out into horizontal flight, and his machine, instead of having a uniform air speed, may be in a state of rapid deceleration.

Let us find out for how long such a state of affairs can exist before the stalling-point is reached. It is unnecessary for the present purpose to make very accurate calculations, and we may, therefore, estimate the lift-drag ratio as being constant between 90 and 55 m.p.h., and equal to, say, 8 to 1.

The drag of the machine is, therefore, $\frac{6,000}{8} = 750$ lbs.

Its kinetic energy which is being gradually absorbed due to this drag, is at 90 m.p.h. 1,620,000 ft.-lbs.; at 55 m.p.h. it is 610,000 ft.-lbs. The difference—1,010,000 ft.-lbs.—is the energy available for horizontal flight without engine before stalling.

If we divide by the average drag we obtain the distance which may be covered, i.e., $\frac{1,010,000}{750} = 1,335$ ft.

The time taken to cover this distance will be, roughly, $12\frac{1}{2}$ seconds.

It is now clear that if the pilot has unwittingly flattened out into horizontal flight and a few seconds later consults his air-speed indicator, he will conclude that he has ample margin for safety if he leaves the position of his elevator control unchanged; in actual fact he is rapidly approaching the stalling point.

It is not suggested that an experienced pilot in such circumstances would have no indication at all of the impending danger if his attention were wholly bent on discovering such indications; but the writer does suggest that a pilot, if worried, may quite easily be misled in the manner described, and that some of the otherwise inexplicable fatal accidents to well-known pilots may quite likely have arisen from such causes.

It is interesting to note that all the methods available to a pilot at present for ascertaining a factor upon which his and his passengers' lives are critically dependent involve a deliberate inquiry, so to speak, for that information on the part of the pilot. Should he happen to omit making that inquiry when it ought to be made, he will just as likely as not be involved in a fatal accident, and even when he does take that precaution he may in certain circumstances be misled.

In a subsequent article it will be shown how the risk of involuntary stalling can be entirely eliminated.

THE ROYAL REVIEW AT ALDERSHOT

IN real summer weather, and in the presence of a record crowd of spectators—estimated at some 50,000—H.M. the King on Wednesday of last week, June 10, reviewed the troops of the Aldershot Command on Laffan's Plain. This famous review has always been a popular event, and this year's review proved to be no exception, while it was certainly even more spectacular than ever. The King was accompanied by the Queen, and on their arrival at the Aldershot Command they were received by a salute of 21 guns. Later, as the King took up his position at the saluting-base, the Royal Salute was given, and the massed bands of the First Division played the National Anthem.

For the first time in history the honour of leading off the review fell to the Royal Air Force, when three half-flights (nine machines in all) opened the proceedings by flying, in formation, past the saluting base at an altitude of about 500 ft.

As they passed the base they dipped gracefully in salute, this manoeuvre being carried out with such apparent ease and perfect order that it created a burst of enthusiastic cheering from the spectators. Then, the aircraft having passed by, the grand march past of troops started, led by the headquarters staff and the massed mounted bands at the head of the cavalry.

THE ROUND-GERMANY FLIGHT

Some Preliminary Results

THE preliminary results of the Round-Germany Competition have now been issued by the German Aero-Club. These results are still subject to minor changes which may be made as a result of more accurate information as to actual distances covered and changes made in machines, engines or pilots, but are not likely to be very much altered, at any rate as regards prize winners. The Rundflug machines were, it will be recollected, divided into three classes, Class A having engines up to 40 h.p., Class B from 40 to 80 h.p., and Class C from 80 to 120 h.p. The machines in Classes A and B competed for the prize of 100,000 gold marks (£5,000) offered by

the first prize in this class was the little twin-engined Mercedes-Daimler L.21, with two Mercedes engines of 19 h.p. each. This machine carried the number 623 in the competition, and was piloted by Loerzer. We believe that actually this machine covered the entire distance in the five circuits, but changes made in the engines reduced the total mileage figure awarded to 3,219 kms. (2,000 miles). This machine thus won first prize in Class A (25,000 marks). Second and third in this class were the two single-engined Mercedes-Daimler light monoplanes, type L.20, each fitted with a 19 h.p. Mercedes engine. No. 608, piloted by Schrenk, obtained

Round-Germany Competition: Winner of first prize in Class B, Herr Hochmuth, descending from his Udet U.10 monoplane with Siemens engine.



the *Berliner Zeitung am Mittag*, while the machines of Class C competed for the Boelcke prize of 50,000 gold marks (£2,500). Finally, there was the Richthofen prize of 45,000 gold marks devoted to special prizes for machines using German engines, and divided equally among the three classes.

Of the machines in Class A, five completed enough of the circuits to bring them into consideration for the prizes, although none got through with full marks. The winner of

the second prize of 15,000 marks with a distance of 3,121 km. (1,870 miles) and No. 609, piloted by Guritzer, obtained the third prize of 10,000 marks, with a distance of 2,947 kms. (1,830 miles). Fourth in this class is the Riesler R.3, with 30 h.p. Anzani, piloted by Schulz, whose distance is given as 1,599 kms. (993 miles).

The smallest machine in the competition, i.e., No. 611, the Darmstadt "Mohamed," with 13.7 h.p. Blackburne



WINNER OF FIRST PRIZE IN LIGHT 'PLANE CLASS : The Mercedes Daimler L.21, piloted by Herr Loerzer, has won first prize in Class A, being credited with a total distance of 3,219 kms. The machine is fitted with two Mercedes 19 h.p. engines.

German Rundflug 1/25 35


THE SMALLEST MACHINE IN THE COMPETITION : The Darmstadt "Mohamed," fitted with Blackburne "Tomtit" engine, has to its credit a distance of 1,320 kms.

"Tomtit," piloted by Fuchs, is credited with 1,320 kms. (820 miles), which is by no means bad for a machine fitted with such low h.p.

In Class B, seven machines covered the total distance of 5,242 kms. (3,250 miles) without incurring negative marks :

the Dietrich D. P. VIIa, with 70 h.p. Siemens, piloted by Katzenstein (3rd prize, 10,000 marks) ; 4, No. 633, The Dietrich D.P. VIIa, 70 h.p. Siemens, piloted by Raab ; 5, No. 654, Junkers K.16, 70 h.p. Siemens, piloted by Roeder ; 6, No. 652, The Dietrich D.B. II, with 79 h.p. Siemens, piloted



ROUND-GERMANY COMPETITION : The Heinkel H.D.32 biplane, fitted with Bristol "Lucifer" engine, covered the total distance of 5,242 kms.

1, No. 660, the Udet U.10 with 58 h.p. Siemens engine, piloted by Hochmuth (1st prize, 25,000 marks) ; 2, No. 639, the Bäumer monoplane, with 60 h.p. Wright engine, piloted by Bäumer himself (2nd prize, 15,000 marks) ; 3, No. 634,

by Auffahrt, and 7, No. 651, the Albatros L.68, 70 h.p. Siemens piloted by V. Richthofen.

Of the machines in Class C, competing for the Boelcke prize, thirteen completed the course, the prizes being awarded as



THE ALBATROS L.69, with Bristol "Lucifer" engine, was not tuned up in time to take part in the competition. This machine is credited with a speed of 220 kms./ph. (135 m.p.h.).

follows: 1, No. 662, the Caspar C.T.1, 80.5 h.p. Mercedes, piloted by Ritter (1st prize, 25,000 marks). This machine was originally placed in Class B, but under test the engine developed 80.5 h.p., and so put the machine into Class C; 2, No. 653, the Junkers K. 16, 81 h.p. Siemens, piloted by Wenke (2nd prize, 15,000 marks). (This machine was also moved up from Class B), and 3, No. 666, Junkers T.29, 82 h.p. Junkers L.I.B. piloted by Schnäbele (3rd prize, 10,000 marks); 4, No. 665, The Junkers T.26, 83.5 h.p. Junkers, piloted by Funke (approximately 79 hours); 5, No. 655, The Dietrich D.P. IIa, 83.5 h.p. Siemens, piloted by Dietrich himself (approximately 98 hours); 6, No. 661, the Udet U.12 "Flamingo," 84 h.p. Siemens, piloted by Kern; 7, No. 644, the Dietrich D.P. IIa, 87.6 h.p. Siemens, piloted by Carganico; 8, No. 680, the Heinkel H.D.21, 106.5 h.p. Mercedes, piloted by Basser; 9, No. 670, the Udet U.8, 109 h.p. Bristol "Lucifer," piloted by Polte; 10, No. 691, the Heinkel H.D.21, 109 h.p. Mercedes, piloted by Junck; 11, No. 685, the Heinkel H.D.21, 110.5 h.p. Mercedes, piloted by Zander; 12, No. 678, the Heinkel H.D.32 100 h.p. Bristol, piloted by Lorenz; and 13, No. 690, the Albatros L.30, 100 h.p. Mercedes piloted by Krupp.

In the competition for the Richthofen prize (for machines using German engines), Mercedes has won 1st prize and Junkers 2nd and 3rd prizes.

Although not among the prize-winning three in any class, the few British engines which were used have accredited themselves very well indeed, and it is at any rate satisfactory to know that the Bristol "Lucifers" in the Udet U.VIII., piloted by Polte, and in the Heinkel H.D.32, piloted by Lorenz, covered the total distance of well over 3,000 miles. The Albatros L.69 monoplane was not completed in time to be thoroughly tuned up before the race, and so the Bristol "Lucifer," with which it was fitted, did not get quite a fair opportunity of showing what it could do. Otherwise, this machine should have figured well in the list, as it must certainly have been far and away the fastest machine in the whole competition. Among the smaller British engines which had been entered, only one actually competed, owing to the non-starting of many of the light 'planes. The single specimen was the Blackburne "Tomtit," fitted in the Darmstadt "Mohamed," which must really be said to have done extremely well considering its low horse-power.

LIGHT 'PLANE AND GLIDER NOTES

REFERENCE was made last week to the slight mishap which befell Alan J. Cobham, in a forced landing, while en route to Berlin, with Colonel Edwards of the Air Ministry as passenger in the De Havilland "Moth." It may be remembered that the machine was slightly damaged, at any rate

by a steep dive, with the result that he had to land in the first available place. Like most fields in Holland, this one was surrounded by high dykes, but even so there would have been sufficient space for the machine to pull up in time had it not been for the fact that the wheels slipped



THE DE HAVILLAND "MOTH": It was on a similar machine that Mr. Cobham recently had a forced landing in Holland due to an air-lock in the petrol system. The "Cirrus" engine itself was perfect.

sufficiently to preclude the possibility of effecting repairs on the spot, and consequently Col. Edwards had to proceed to Berlin by train, while Cobham brought the machine back by boat the next day.

WHENEVER a machine makes a forced landing one is apt to take it for granted that the cause is engine trouble, and, doubtless, there must have been many who jumped to that conclusion when reading of Cobham's mishap in Holland. To prevent any erroneous impressions getting about, it, therefore, seems well to place on record the actual facts, which, it will be found, do not reflect adversely on either engine or machine. What actually happened was that Cobham was flying fairly low, at about 500 ft. or less, when he ran out of petrol. Now in the "Moth" the petrol tank is divided into two compartments in such a way that, when the main tank runs dry, an auxiliary tank still contains sufficient fuel for a flight of a good many miles—sufficient, at any rate, to reach a suitable landing ground in most cases. On this occasion Cobham switched over to the reserve tank, but the carburettor had run quite dry and thus the supply pipe had been entirely emptied of petrol. As the petrol ran to the carburettor from the service tank an air lock was formed, and, owing to the low altitude at which he was flying, Cobham had no time to get the engine started again

into a small ditch, only about a foot deep, which the pilot had not noticed. The undercarriage was demolished, although very little other damage was done.

It will be seen that the cause of the mishap was very trifling, and one which, on most occasions, would not have led to a forced landing at all. We understand that to guard against the remote possibility of a similar mishap occurring again, the petrol supply pipe will be of larger diameter in all future installations so that the possibility of an air lock should be entirely removed. As it was, the rather slight mishap prevented the "Moth" from being demonstrated in Berlin, which is a very great pity, since we have not the slightest doubt that in the hands of Mr. Cobham the machine would have greatly impressed visitors to the Tempelhofer aerodrome.

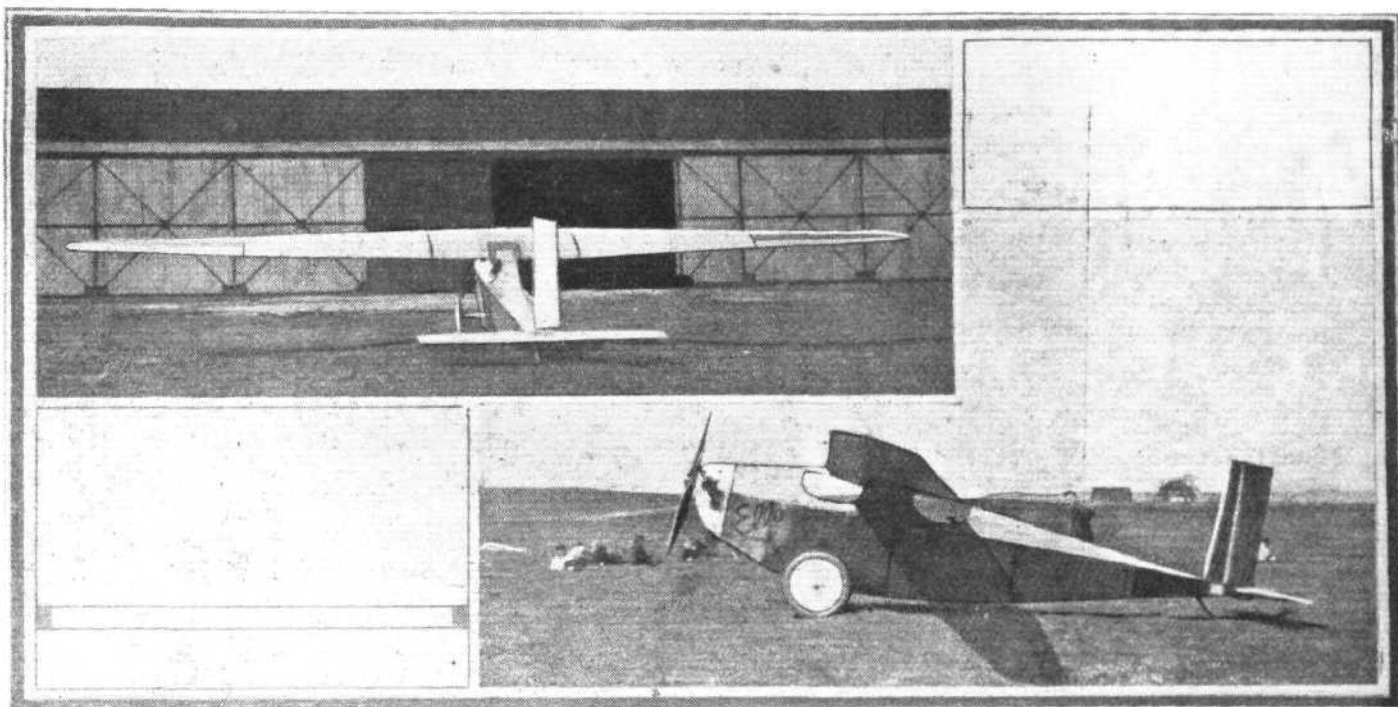
ENTRIES, at single fee, for the forthcoming meeting at Vauville have now closed, but entries may still be made at double fee up till June 29. The double entrance fee is 200 francs, and this will be refunded to competitors who have their machines at the Vauville aerodrome before noon of July 26. Intending competitors should write to "l'Association Francaise Aerienne, 40, Quai des Celestins, Paris (4e)."

THE Vauville meeting, which is international in character, commences on July 26 and finishes on August 9, and is endowed with prizes to the value of 100,000 francs. It is open to gliders and light 'planes, but the performances demanded are, of course, quite different in the two classes. In the case of light 'planes the actual competition is in the form of speed trials over a measured course of 70 kms., which has to be covered once a day during the competition, and prizes will be awarded both for highest speed over the course on each day and for the highest aggregate speed during the meeting.

BEFORE being allowed to take part in the competition, machines are required to pass eliminating tests in which the power limit takes the form of a limit on fuel consumption. In these eliminating tests the machines will be required to fly a distance of 50 kms. (31 miles), at an altitude of less than 200 m. (650 ft.), after which they must climb to an altitude of 2,000 m. (6,600 ft.). The completion of the 50 kms. circuit, and the subsequent climb to 2,000 m., must not occupy more than two hours. Landing between completing the circuit and doing the climb will not be permitted, and the amount of fuel allowed for the particular tests must not exceed 8 kgs. (17.6 lbs.) for single-seaters, and 12 kgs. (26.4 lbs.) for two-seaters. These eliminating

founder and proprietor of *Flugzeugbau Messerschmitt*, of Bamberg, the following letter, written in hospital, where Herr. Messerschmitt is at present confined to bed as a result of a serious crash. He had entered two machines for the Round-Germany competition, both of the M.17 type and both fitted with A.B.C. "Scorpion" engines: "During a test flight on the first M.17, on May 14, I got caught in the overhead cables of an electric high-tension power line. The machine was badly damaged, and I myself rather seriously injured, which is the reason I am writing from this sanatorium, where I have been since the accident. It took so long to effect repairs that the machine could not be ready in time for the B.Z. competition. The second machine was not finished until two days before the start and was, unfortunately, compelled to make a forced landing in the Thüringer-Wald on account of plug trouble. The machine was only slightly damaged, but repairs could not be completed in time. If, in spite of these troubles, you are still interested in particulars of the M.17, I will give them here.

"The M.17 is a high-wing monoplane two-seater, with pilot at the back and passenger in the front, both seated below the wing. In order to improve the view, the upper portion of the fuselage is narrowed-in, so that the wing rests on a fuselage width of 23 cm. (9 in.) only. The wing is attached



A NON-STARTER IN THE RUNDFLUG: The Messerschmitt M.17 light monoplane, with A.B.C. "Scorpion" engine, which crashed owing to coming into contact with some overhead electric high-tension cables.

tests may be expected to keep the power of the engines used within reasonable limits, with probably a maximum of in the neighbourhood of 30 h.p. for single-seaters and 45 h.p. for two-seaters. In view of the fact that the British light 'plane meeting at Lympne is to be held on August 1, 2 and 3, it seems very doubtful if any British light 'planes will be competing.

Up to the present 23 machines have been entered, and it is expected that something like 30 all told will be officially entered before the closing date. So far, four countries are represented, namely, France, Belgium, Holland and Roumania. The following is the entries list, and it may be mentioned that in the competition the machines will carry the same numbers as are shown in the following list. The letters in brackets after each entry indicate: B, Belgium; F, France; H, Holland; R, Roumania. Nos. 1, 2 and 3—S.A.B.C.A. (B.); 4—Georges Ligreau (F.); 5 and 6—H. Pander en Zoonen, (H.); 7—Eric Nessler, (F.); 8—H. & M. Farman, (F.); 9—Henry Potez, (F.); 10—Victor Simonet, (B.); 11—Briens-Chapeau, (F.); 12—Bardin-Alerion, (F.); 13—C. Jonesco, (R.); 14—Robert Ferber, (F.); 15—Georges Sablier (F.); 16—Bourriau-Chapautau (F.); 17—Aero-Club Sablais (F.); 18—Alfred Auger, (F.); 19 and 20—Louis Peyret, (F.); 21—J. Rolle, (F.); 22—Rousset, (F.); and 22—Leon Gateu (F.)

WE have received from Herr. Ing. Willy Messerschmitt,

to the fuselage at four points, and is without bracing. The pilot enters his cockpit through a small trap-door in the trailing edge of the wing, while the passenger enters through a door in the side of the fuselage. The wing is in three parts, with the two end pieces made easily detachable. The centre portion has a span of 2 m. (6 ft. 7 in.), and remains in place on the fuselage during transport or storage. The under-carriage has a rectangular box-section steel axle working in slots in the sides of the fuselage and carrying at its ends two short lengths of steel tube on which the wheels take their bearings.

"The main characteristics of the M.17 are: span 11.6 m. (38 ft.), length, 5.4 m. (17 ft. 8 in.), wing area, 10.3 sq. m. (111 sq. ft.); weight, empty, 180 kg. (396 lb.); useful load 190 kg. (418 lb.); total loaded weight, 370 kg. (814 lb.). Take-off in 45 metres and 5 secs. The engine is an A.B.C. "Scorpion," running at 2,400 r.p.m., at which speed it develops 24 h.p. The top speed is 150 km. (93.5 m.p.h.), and the landing speed, 65 km./h. (40 m.p.h.). The climb to 1,000 metres (3,300 ft.) occupies 6½ minutes."

THE general appearance of the Messerschmitt M.17 may be gathered from an inspection of the accompanying photographs. The machine is not unlike the Beardmore "Wee-Bee I." which won last year's light 'plane competition at Lympne, but the fuselage is considerably deeper, and the wing is of pure cantilever type, tapering in plan of form and thickness.

THE ACCIDENT TO THE GLOSTER II

THE mishap which befell the Gloucestershire Aircraft Company's racing machine, the "Gloster II," at Cranwell the other day, and which resulted in somewhat severe injuries to the pilot, Mr. Larry Carter, was in some ways one of the most amazing ever recorded. The machine had been taken to Cranwell for tests, this being the only available aerodrome of sufficient size and with a good enough surface to make the flying of such a fast machine reasonably safe. Mr. Carter had flown the machine two or three times previously and everything had appeared to be in perfect order. It was then decided to test the machine over a measured course and Carter, who had been flying it at about 200 ft. for some time, came down to about 40 ft. so as to facilitate correct timing of the machine.

As he approached the ground the tail of the machine was seen to "flutter," and Carter instantly switched off and landed, this being obviously the only thing to do in the circumstances. The machine was, however, going at terrific speed, and it is estimated that at the actual instant when the wheels touched the ground the speed must have been in the neighbourhood of 200 m.p.h. As might have been

This question of tail "flutter" is not altogether new, and we believe that something of a similar nature has been observed in other machines. In the case of a racing machine like the "Gloster II," travelling at possibly 250 m.p.h. or more, and with the tail in a relative wind of probably round about 300 m.p.h., somewhat unusual conditions are always likely to be met with, and we do not think the accident can be said to reflect in the slightest degree adversely on either Mr. H. P. Foland, the designer of the machine, or on the Gloucestershire Aircraft Company, who constructed it. It should be recollected that for the last four or five years this firm has devoted more attention to racing aircraft than has any other company in Great Britain, and that this is the first accident sustained by any of their racing machines. On the contrary, we think that the mishap may be the indirect means of doing a great deal of good, since it may help to elucidate certain problems which would not have cropped up if this firm had not persevered in the building of racing machines.

The accompanying photograph shows a sister 'plane fitted with floats, from which the general appearance is fairly

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□ The Gloster II,
□ Seaplane: It was
□ on a sister 'plane
□ fitted with wheels
□ that Larry Carter
□ met with a mis-
□ hap while flying
□ at Cranwell.
□ The engine is a
□ Napier "Lion."
□ Note the careful
□ streamlining and
□ the Lamblin strut
□ radiators.

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expected, the tyres were ripped off instantly, and were followed a few seconds later by the wheels, after which the whole undercarriage collapsed, letting the machine down on its belly. As luck would have it the Fairey-Reid metal propeller struck the ground in a vertical position and was doubled back underneath, thus forming a sort of skid upon which the machine slithered along a distance of some 150 yards, finally coming to a standstill without turning over. The force of the impact was, however, so great that it flung Mr. Carter forward in his cockpit, and caused him to knock his forehead against the coaming or instrument board. Apart from a fractured skull Mr. Carter also broke a leg, but this was set the next day, and we are extremely glad to be able to report that Carter is now making excellent progress. We feel sure that all readers of FLIGHT will join us in an expression of sympathy, and in wishing him a speedy recovery from what might very easily have been a fatal accident.

With regard to the cause of the accident itself it is extremely difficult to express an opinion, but it would seem possible that the impulses of the slip-stream on the tail had a period corresponding to the period of the tail itself, and that it was something of this sort which gave rise to the tail "flutter."

clear. It will be observed that streamlining has been carried to its logical conclusion, and that except for a retractable undercarriage it would be difficult to imagine how the reduction of head resistance could be carried any further. The cowling over the Napier "Lion" engine is extremely neat, and the fitting of Lamblin strut radiators to the undercarriage legs has left the nose of the fuselage particularly clean.

Incidentally, it is of interest to note that the first of all Gloucester racing machines, the Mars I, which won the Derby in 1921 and 1922, and which has to its credit, among other things, the phenomenal climb of 20,000 ft. in 12½ mins., has been converted into a seaplane and is being used as a practice machine for pilots who will fly the "Gloster III" in the Schneider Cup race in America. The "Bamel," as Mars I was nicknamed, is said to be extraordinarily nice as a seaplane, which is something of an achievement in view of the fact that the machine was designed in 1921 and built in six weeks. In its first race—the aerial Derby of 1921—the machine was actually and literally finished on the starting line, the intake pipes and cowling being fitted after some of the handicap machines of the race had already started.

Foreign Decorations

THE King has given authority for the wearing of the insignia of the following decorations:—

Mr. Arthur Richard Seabrook, lately Sergeant-Major (First Class), Royal Air Force.—Third Class of the Order of Al Merito, conferred on him by the President of the Republic

of Chile in recognition of valuable services rendered by him.

Order of the Sacred Treasure (Japan)

Insignia of the Sixth Class.—Mr. S. Manton, lately Corporal Mechanic in the Royal Air Force, conferred upon him in recognition of valuable services.

THE INSTITUTION OF AERONAUTICAL ENGINEERS

AN extraordinary meeting of the Institution of Aeronautical Engineers was held at the Engineers' Club on June 10, to consider the proposed amalgamation of the Institution with the Royal Aeronautical Society, Mr. H. B. Molesworth being in the chair.

The Chairman moved that the objects and rules of the Institution be extended by the following clause: "To amalgamate with any other society or institution having objects wholly or partly similar to the Institution." The Chairman then spoke of the draft agreement between the Institution and the Royal Aeronautical Society, and said that although the Council greatly regretted the suggested step, it had come to the conclusion that the financial position of the Institution rendered this course necessary. The Society of Motor Manufacturers and Traders, which had hitherto generously supported the Institution by three grants totalling £400, found themselves unable to continue this support, while the income from subscriptions of £250 was insufficient to meet the Institution's printing and other expenses. It was felt, the Chairman said, that the work hitherto done by the Institution could be executed in the future under the aegis of the Royal Aeronautical Society. The alternative, that of increasing the subscriptions, had been considered by the Council, who were willing to try and carry on if every member paid a guinea increased subscription this year and a future annual subscription of three guineas. Even if this were done there was so much printing on hand that there would probably be a loss on this year's working, unless a substantial increase in membership took place or a liberal endowment was forthcoming. In conclusion the Chairman said that the Council, having carefully considered the question in all its aspects, had come to the conclusion that the Institution of Aeronautical Engineers could not be carried on unless one of the two alternatives mentioned was adopted.

The Hon. Secretary, Mr. L. Howard Flanders then read a number of letters from members unable to attend the meeting, most of whom expressed themselves against the proposed amalgamation.

In throwing the meeting open for discussion the Chairman said that the Institution really could not carry on under present conditions. It had been uphill work all the time, and although the Council did not recommend one alternative more than another, they simply stated the case for the consideration of members.

Dr. Thurston said he very much regretted the amalgamation, and that the two Societies were of quite a different character. It was because he was so convinced that the Institution of Aeronautical Engineers was devoting its special attention to the practical application of aeronautics that he thought they could do their work as a separate body and without association with the Royal Aeronautical Society which devoted itself to pure science, and he would strongly oppose the proposed amalgamation.

Mr. L. Howard Flanders, Hon. Secretary, said he was going to ask members to vote in favour of amalgamation, giving as his reason that to ask members to support two institutions was a big drain on their resources and it seemed to him that more good would result from having one body only. In his opinion, if the Institution amalgamated with the Royal Aeronautical Society, it would infuse a new element of about 100 members, which would be equivalent to some 15 per cent. and if they pulled together and tried to get the Institution's work done through the Royal Aeronautical Society they would succeed in doing so by reducing the cost of running the two bodies.

Mr. Howarth thought that if the amalgamation took place it would only be a question of about another 80 members, as already many of their members belonged to both bodies. He failed to see how they could gain many seats on the

Council. If it was a question of increased subscriptions he thought the Institution could go on independently.

Mr. Houlberg said that if they did amalgamate it meant an increased subscription in any case, so that they would be no better off from that point of view. He was strongly in favour of a higher subscription for the Institution, and for carrying on.

Mr. W. O. Manning was in favour of the amalgamation, and said he thought that what was wanted in a science like that of aeronautics was one strong, single body. If they divided their forces there was bound to be weakness. The point was that the Institution could not possibly carry on at present, and it might not even be able to do so with increased subscriptions. Economies had been effected in the Royal Aeronautical Society, and he thought a good balance-sheet should be shown for next year. They should take a broad view of the matter. The interests of the Institution were, after all, subsidiary to the interests of science as a whole, and they wanted to keep the interest of the whole science alive.

Mr. Wingfield said he entirely disagreed as to the advisability of amalgamating. The thing to do was for existing members to get new members. If each member undertook to get one new member, the whole difficulty would be solved.

Capt. Sayers said that he could not agree with Mr. Manning's views. There was room for two societies; the business of the scientist provided knowledge and the business of the engineer used it. He did agree with Mr. Manning, however, that if they agreed to amalgamate, they could have a very great influence in the Royal Aeronautical Society. It seemed to him that the whole question before them was: were they going to shut down, or were they going to try and shake up the Royal Aeronautical Society? Therefore, much as he regretted the amalgamation, he would express himself in favour of it.

Mr. A. V. Roe was against the amalgamation and said that he personally would gladly give five guineas towards the Institution of Aeronautical Engineers, if they decided to carry on. Perhaps they could have a whip round to see what could be done, and he really thought they should make an effort to keep the Institution alive. Mr. Molesworth promised another five guineas, as did also Dr. Thurston, the latter saying that he had received several letters promising various amounts. Mr. Bramson said he had a letter offering ten guineas, and would give five guineas himself. Why should not every member of the Institution make a real effort to recruit new members? He thought if they took the time and trouble a committee might be set up and endeavour to get people together. He suggested an emergency committee should be appointed to make a real effort, to which Mr. Houlberg replied that he would be prepared to serve on this committee. Dr. Thurston also expressed his willingness to serve on the committee.

Mr. Evans thought the biggest item on the expenses side was the Institution's publication and that this seemed to be the only item that could either be reduced by half or cut out altogether for a short time. To this the Hon. Secretary, Mr. L. Howard Flanders, replied that there were many members abroad who received only the publication and who were not able to attend the meetings.

Finally, the motion was put to the vote, with the result that the proposed amalgamation was turned down. After a general discussion, it was decided that a sub-committee should be formed to consider ways and means, and Dr. Thurston undertook to convene such a committee, which would hold a meeting at the earliest opportunity.

A subscription list was opened for the purpose of providing a fund to enable the Institution to carry on over the remainder of the present year, and the amount of £53 13s. 1d. was promised before the meeting closed.



A Thames Air Port?

ACCORDING to the *Morning Post*, the Port of London Authority has just given its consent to the French Air Union Company carrying out some experiments in connection with using the Thames as an air port. The part of the river chosen for these experiments is near Hammersmith Bridge, and Shreck amphibians will be the machines employed.

The Faraday Exhibit at South Kensington

A SMALL but interesting exhibit was opened at the Science Museum, South Kensington, on June 16, commemorating the centenary of the discovery of benzene by Faraday. This exhibit comprises a number of items directly associated with

this great scientist—including the two original specimens of benzene, prepared and labelled by Faraday—and other subjects appertaining to benzene.

An Australia-London Flight?

SQUAD.-LDR. WACKETT is carrying out tests in Australia with a flying boat he has designed for commercial work, and should these tests prove satisfactory it is possible that he may attempt a flight from Australia to London on this machine.

N.P.L. "At Home"

ON Tuesday next, June 23, the General Board of the National Physical Laboratory hold their annual inspection and "At Home" from 3 to 6 p.m.

Personals

Married

LEWIS GEORGE LE BLOUNT CROKE, R.A.F., was married on June 10 at All Saints' Church, Lindfield, to PHYLLIS MARY, elder daughter of Mr. and Mrs. George CHURCHER, of Beckworth, Lindfield, Sussex.

The marriage arranged between Mr. EDWARD DAYRELL HANDLEY DAVIES, R.A.F., elder son of Capt. Dayrell Davies (late R.N.), and Mrs. Dayrell Davies, of S. Testwood, Hants, and Aldyth, eldest daughter of Brig.-Gen. and Mrs. E. T. Tudor, Waverley Court, Camberley, took place on Thursday, June 4, at St. Paul's, Camberley.

CHARLES ALEXANDER GOATCHER, R.A.F., was married, on June 6, at the Church of St. Michael and All Angels, Bedford Park, W., to AMY ISABEL MARMION.

Squadron-Leader CLAUDE ALWARD RIDLEY, D.S.O., M.C., R.A.F., youngest son of Mr. and Mrs. Louis C. Ridley, of Holland Park, was married on June 4, at St. Mark's, North Audley Street, to Miss Liliat Elizabeth (Naida) McAlpine, daughter of Mr. and Mrs. Robert McAlpine, of East Grinstead, and granddaughter of Sir Robert McAlpine. Squadron-Leader J. C. Russell, D.S.O., R.A.F., was best man. The reception afterwards was held at Claridge's Hotel, the guests including: Wing Commander and Mrs. Tyssen, Commander and Mrs. Hammond, Air Commodore T. C. R. Higgins, Air Commodore and Mrs. Longmore, Air Commodore and Mrs. Munro, Wing Commander and Mrs. Whitelock, etc.

J. M. L. RUET, Order of the Rising Sun, eldest son of Mr. and Mrs. M. Ruet, late of Vine House, West Drayton, was married on June 16, at Glénat Parish Church, to PAULE, younger daughter of the late Commodore RIGAL, Officer Legion of Honour, and Mrs. Rigal, of Tas Caseo, Glénat, Cantal, France.

To be Married

The engagement is announced of Flight-Lieut. DAVID VAUGHAN CARNEGIE, A.F.C., only son of Rev. J. D. and Mrs. Carnegie, Stamford, Lincolnshire, to Enid May, only daughter of Mr. and Mrs. W. Reavell, Broadwater, Ipswich.

The engagement is announced between Major OSCAR T. GNOSSELIUS, late R.A.F., only son of the late Mr. A. J. Gnossepius, of Liverpool, and of Mrs. Gnossepius, of Betty Fold, Hawkshead, and BARBARA, second daughter of Mr. and Mrs. W. G. COLLINGWOOD, of Lanehead, Coniston.

The marriage between Flying Officer WILLIAM GRAHAM NICHOLLS and Miss MARY ELLEN FAIRHOLME, will take place quietly at St. Mary's Church, The Boltons, South Kensington, on Saturday, July 18, at 2.30 p.m.

Item

The will of the late Major-Gen. SIR WILLOUGHBY GARNONS GWATKIN, K.C.M.G., C.B., of Bishopsbourne Rectory, Canterbury, colonel of the Manchester Regt., lately Chief of the General Staff in Canada and Air Vice-Marshal and Inspector-General of the Canadian Air Force, who died on February 2, aged 65, has been proved at £10,972.

Aerial Survey in Burma

FOR some time past a considerable amount of good work in the way of aerial survey and photography, has been accomplished by the Air Survey Co., Ltd., in Burma. This company, the moving spirit of which is our old friend R. C. Kemp, one of the early-day Brooklands pilots, has a small but very efficient base at Rangoon, and a fleet of three D.H.9's specially equipped and adapted as seaplanes for this work.

This season one machine has been afloat for over three months down the southern coast of Burma, where a survey and reconnaissance of forest country was carried out to the extent of 14,000 square miles with signal success.

The reconnaissance included sketching on the existing one-inch topographical sheets by an expert observer, who

was also a fully-qualified forest officer, who succeeded in showing distinctly with their boundaries all main types of forest, while his maps were supported by vertical photography over the more important sections.

It may be remembered that the Air Survey Co., Ltd., was formed to carry on the work initiated by Mr. R. C. Kemp on the survey of 1,400 square miles in the Irrawaddy Delta. Between then and this season's work the company has completed a survey of Rangoon and suburbs at a scale of 12 ins. to the mile, and in conjunction with the survey of India have completed the photography of the Yenangyoung oil fields, the photographs being scaled to 24 ins. to the mile, at which scale the map was completed. In addition one or two small surveys have been carried out.

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Avros for Spain:
A batch of Avro 504K machines ready for delivery to the Spanish Royal Naval Air Service. They are being supplied by the Aircraft Disposal Co., Ltd., and Capt. Cortijo, of the Spanish Royal Naval Commission, and Maj. J. Stewart, sales manager of the "A.D.C.," will be seen standing by the machines.

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SMITH'S GYRO TURN INDICATOR

New Instrument can be Driven Direct from Engine or by Small Windmill

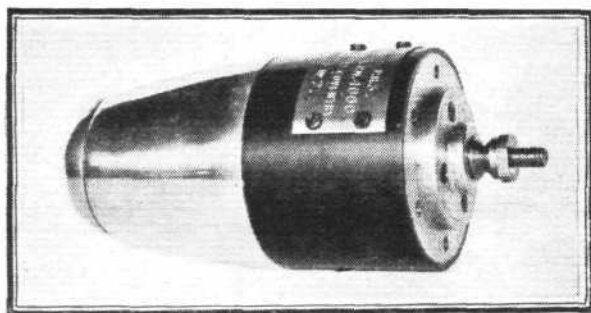
IN spite of the great improvements effected in recent years in the design and construction of compasses for aircraft it became evident long ago that the compass by itself, no matter how excellent its design, could not adequately fulfil the functions of a turn indicator under all conditions. Many are the inventors who have been at work on the design of an instrument intended as supplementary to the compass, rather than as a substitute for it, and a number of turn indicators have been produced, some of which have been very excellent in theory, but of rather a complicated nature and making, perhaps, too great a demand on the pilot. Among those who have been working on the problem of a really suitable turn indicator are S. Smith & Sons (M.A.), Ltd., of Cricklewood, and that well-known firm has now produced an instrument which, it is felt, will meet all the demands that could possibly be made on it.

We recently paid a visit to the works of this firm at Cricklewood and there saw one of the new Turn Indicators mounted on a turn-table in the laboratory. Although it is one thing for an instrument to work in a laboratory, conditions are sometimes quite different for the same instrument to work in an aeroplane carrying out various violent manoeuvres, but there is no reason whatever to doubt that the Smith Turn Indicator will do all that is claimed for it, and as a matter of fact we understand that the instrument has been accepted by the Air Ministry as suitable for fitting on commercial as well as service aeroplanes.

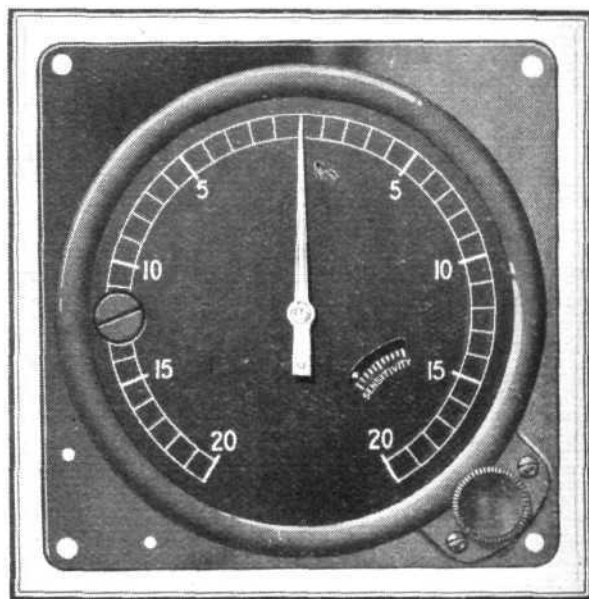
The new Turn Indicator is of the gyroscopic type, and consists fundamentally of two separate instruments, an alternating current generator and the gyroscopic indicator

in that from the very fact that it surrounds the stator the size of the rotor is increased so that for a given rotor weight the moment of inertia will be greater than in the case of a small-diameter rotor revolving inside the stator. In the Smith instrument the rotor normally runs at a speed of about 2,600 r.p.m. which speed, although sufficiently low to ensure that there will be no difficulty with bearings, produces a very considerable force. It is due to this fact that the sensitivity of the instrument is such that it will indicate to the pilot even the slightest turn.

The generator which supplies the current for the Smith Gyro Turn indicator is of the three-phase alternating current type, and can either be mounted outside the fuselage and driven by a windmill, or can be mounted inside and driven by the engine, *via* a small gear-box. One of our photographs shows the generator which, it will be seen, is of perfect streamline form so as to offer as little resistance as possible. It may be mentioned that the output of this generator is



SMITH'S GYRO TURN INDICATOR: The three-phase alternating-current generator which provides the electricity for driving the Smith gyro turn indicator.



SMITH GYRO TURN INDICATOR: In this view of the dial the knurled knob controlling the sensitivity is seen in the lower right-hand corner.

itself, in which the gyroscope is formed by the electro-motor. It is well known, of course, that when a rotating mass has its axis deflected by some external force there is set up a tendency for the axis to move in a plane at right angles to that in which the deflection has occurred, this force being known as "precession," and it is upon this simple principle that the Smith Gyro Turn Indicator depends. When mounted in an aircraft, the axis of the gyroscope, or in other words the rotor of the electro-motor, is placed in the fore and aft direction, and the tilting frame or ring which carries the gyroscope is in turn fitted on a transverse axis, at right angles to the line of flight. The result of this arrangement is of course that the whole instrument can tilt round the transverse axis and is caused to do so by the slightest turn to right or left, and the rotor spindle is so arranged as to operate a pointer on the circular dial mounted on the instrument board of the pilot's cockpit. It may here be mentioned that means are provided for varying within very wide limits the sensitivity of the instrument, the control taking the form of a leaf spring connected by a link to the tilting frame. Some idea of the sensitivity of the instrument is provided by the fact that when set to the most sensitive position the instrument will indicate a rate of turn as low as one complete turn in ten minutes.

Chief among the novel features is, perhaps, the entire absence of sliding or moving electrical contacts, so that connections are always positive and there is nothing to clog or otherwise spoil the perfect nature of the contact. This has been made possible by so designing the three-phase electro-motor that the rotor surrounds the stator, the three leads from the generator going to the stator, and having no connection whatever with the rotor. Incidentally there would seem to be another advantage in this arrangement

not only ample for supplying the gyroscope, but, actually, there is an excess of output which can be used, if desired, for illuminating the cockpit. In another photograph is shown the dial of the turn indicator, and the control which enables the pilot to vary the sensitivity of the instrument is in the form of a knurled knob in the lower right-hand corner. This knob alters the fulcrum of the leaf spring, and thus the force required to turn the pointer through a given angle. The advantage of this control over sensitivity is, of course, that the same instrument can be used in a variety of different types of machines, from the heavy and slow commercial freight carrier to the small single-seater fighter. The same sensitivity setting would not, of course, give the same reading on two such different types of machines, since the sensitivity is a function of the rate of turn, but settings can be chosen which will give the same sensitivity in the slow and fast machine. There can be little doubt that pilots differ considerably in the amount of sensitivity they prefer and, consequently, the means of adjustment provided will enable the sensitivity to be regulated to suit the tastes of individual pilots, this being a very important feature in the design of the instrument. We should have liked to publish more detailed illustrations of Smith's gyro indicator but, at the moment, the manufacturers are not willing to illustrate the instrument in too great detail, and we must therefore content ourselves with this very general description of the instrument. As regards workmanship and finish the gyro turn indicator is up to the usual high standard which one associates with all the products of this firm. In conclusion it might be mentioned that the weight of the gyro complete with generator and fitted with windmill drive attachment is 9 lbs. 15½ ozs., while the weight of gear-box and flex, when it is desired to use the engine drive, is 4 lbs. 11 ozs.

AIR WORK IN CANADA

IN previous issues of FLIGHT we have given certain information in connection with the splendid work done by aircraft in Canada, especially as regards that very important branch, Aerial Survey—one of those spheres of activity in which, to our way of thinking, aircraft is particularly fitted and should be utilised to a far greater extent than it has up to now. This week we are able to publish, thanks to the courtesy of "Natural Resources, Canada" (published by the Canadian Department of the Interior), some notes on Canada's 1925 programme of aerial activity. The programme of flying operations to be carried out during the coming season for the Forest Branches of the Government's service by the Royal Canadian Air Force, was drawn up at a recent annual inter-departmental conference on flying operations, held at Ottawa. This Conference was held under the chairmanship of the deputy Minister for National Defence and representatives from twenty branches of the Dominion Government Service were present. It was announced that some thirty-three aircraft would be available for civil Government operations, distributed at the various stations, as follows:—Dartmouth, N.S. Air Station, 2; Ottawa Air Station, 4; Manitoba area, 16; High River, Alberta, Air Station, 7; and Vancouver Air Station, 4. One or more aircraft in each section will be fitted out for aerial photography.

The growing importance which aviation is assuming in carrying on the work of the various branches of the Dominion Government's service is shown by the increasing demands on pilots and equipment in the Royal Canadian Air Force. As in the past, the work of the Department of the Interior is the largest item on the programme. The plans for 1925 show extensive work for the Forestry, Topographical Surveys, National Parks, Water Power and Reclamation, International Boundary Commission, and Ordnance Land branches of the Department. In the programme which we outline herewith, the photographic work for the coming session is a remarkable increase over the work done in 1924, when 40,000 sq. miles were covered by aerial photography. The 1925 programme provides for at least double last year's area. The major part of the photographic work will be done for the Topographical Survey Branch of the Interior in connection with its aerial surveys. The actual mapping is under the Topographical Society. Forest patrol work has also been extended by the advantage of a new sub-station near The Pas to serve the west part of Northern Manitoba and by the inclusion of the northern part of the Clearwater Forest reserve in western Alberta in the area to be patrolled.

Considerable progress has been made in perfecting organisation and developing equipment which will ensure maximum efficiency in forest fire protection at costs within the economic means of the Forest authorities. The Royal Canadian Air Force and the Dominion Forest Service are devoting all their

energies to this end. The details of the coming session's programme are as follows:—

The Department of Agriculture.—Investigation of the upper atmosphere in connection with the spread of wheat rust diseases; continuation of work on white pine blister rust control.

Department of Customs.—Patrols for preventive purposes.

Department for Indian Affairs.—Transportation for parties paying Treaty money in Northern Manitoba.

Department of Fisheries.—Fishery patrols in Northern British Columbia.

Department of Mines.—Vertical photography for mapping an area north of Georgian Bay.

Department of Public Works.—Photographic survey of the Portland Canal, B.C.

Department of Railways and Canals.—Photography of Hudson Bay Railway line and Churchill River District.

Department of Interior, Photographic Surveys.—Vertical photography for mapping Windsor, N.S., and Fredericton, N.B., sectional sheets; oblique photography for mapping counties Annapolis, Queens, Kings, Lunenburg, N.S.; vertical photography of Three Rivers, Quebec, and Kitchener, Ontario, sectional sheets, and of areas in the upper Gatineau watershed and the Rouyn mineral areas, Quebec; oblique photography of the Churchill River from Fort Churchill, Manitoba, to Pakkatawagan; completion of oblique photography in The Pas mineral area; extension of previous photographic surveys in Ontario and Manitoba; photography for the compilation of Battleford, Victoria, Fort Assinibione, Peace Hills and Red Deer sectional sheets.

Forestry Branch.—Photography over forested areas in Maritime Provinces; vertical and oblique photography of the Peatawawa forest reserve; patrols for the detection and suppression of fires over the forested areas surrounding Lake Winnipeg and Lake Winnipegosis; continuation of the air patrols of the Crowsnest, Bow River and Clearwater forest reserves.

Canadian National Parks.—Photographing historical sites in Maritime Provinces, Ontario, and Quebec; fire patrol for Waterton Lakes, Rocky Mountains and Kootenay parks; photographic reconnaissance in unsurveyed portions of Jasper Park area.

Water Power and Reclamation Service.—Photographs of power sites in Nova Scotia, New Brunswick, Ontario, Quebec, and British Columbia.

International Boundary Commission.—Photographing of International Boundary in southern Manitoba and southern Alberta.

Ordnance Lands Branch.—Aerial surveys of the Rideau canal. From the above, it will be seen that they are going to be pretty busy in Canada from now on.



"CERRIC"

ALTHOUGH we have referred on previous occasions to the "Cerric" cellulose enamels and other products manufactured by Cellon (Richmond), Ltd., of Richmond, Surrey—the makers of the world-famous "Cellon" aeroplane dope—we would like to draw our readers' attention once again to these "Cerric" products, for we understand that they are now attaining a high degree of popularity, not only in the aviation world, but especially in the motor-car industry.

"Cerric" products, we need hardly remind our readers, consist of black and coloured "enamels" and lacquers belonging to the cellulose family; they are, in fact, an application to general uses of the process of doping, so important in aircraft production, having been developed from the various properties of the cellulose solutions employed in the manufacture of "Cellon" aeroplane dope.

"Cerric" enamels differ from ordinary enamels—and to some considerable advantage—in that they do not need "stoving," can be applied very rapidly and evenly by spray, dry very quickly, and are unaffected by oil, petrol, etc., materials treated with "Cerric" being readily washed. Very much the same applies to the lacquers, which give a particularly fine finish to metal parts.

We may say that "Cerric" is now being largely used in connection with aircraft construction, being particularly suitable for cowlings and all other metal parts, as it protects them from the atmosphere, petrol and oil, etc. The coloured enamels can also be used for treatment of the inside of cockpits, cabins, etc., especially when it is remembered that

oil and petrol will not cause any ill effects and that they take and "enjoy" a wash and polish—in fact, the more you polish the better. This is a great advantage in the case of the wood solutions (which replace French polishing and varnish) generally used for instrument-boards, ply-wood parts, etc.

The rapidity of spray application of the "Cerric" materials and the short time required for drying have made them particularly suitable for aircraft work, as they accelerate output to a very large extent. We understand that Cellon, Ltd., are now meeting with a very steady demand for motor-car finishes in "Cerric" and already a number of firms have installed spray plants for these materials. For those of our readers who require their cars repainted and wish to give this type of finish a trial, we may say the following firms are in a position to undertake this work:—

- Messrs. Mulliner and Co., Bedford Park Works, Chiswick, London, W. 4.
- " Carolus, Ltd., 12, Orsett Mews, Gloucester Terrace, London, W.
- " Union Motor Co., 36, Ethelberger Street, Battersea, London, S.W.
- " Birming Car Painting Co., Station Works, Station Road, Northfield, near Birmingham.
- " Rapolac Co., 12, Kelvindale Lane, Glasgow.

Of course, for domestic purposes there is practically "no end" to the uses to which "Cerric" may be applied to great advantage.

THE ROYAL AIR FORCE

London Gazette, June 9, 1925.

General Duties Branch

Flight Cadet A. H. Willetts, having successfully passed through the R.A.F. Cadet College, Cranwell, is granted a permanent commission as a Pilot Officer, with effect from, and seny. of, May 16.

The following are granted permanent commissions in ranks stated, June 10:—Flight Lieuts. D. L. Blackford, H. E. Searson, D.F.C., A. J. Warwick; Flying Officer F. W. Long.

Pilot Officer B. D. J. Broadway is promoted to the rank of Flying Officer; Feb. 15. The following Pilot Officers on probation are confirmed in rank, May 12:—D. W. Trotter, A. H. Frost, G. B. Collett. Flying Officer A. D. Page, M.M., is transferred to the Reserve, Class A; June 10. Observer

Officer J. Mitchell, D.S.O., D.F.C., is transd. to the Reserve, Class C; June 5.

Medical Branch

P. D. Barling, M.B., is granted a short-service commn. for three years on active list as a Flying Officer, with effect from, and with seny. of, May 25.

Reserve of Air Force Officers

The following are confirmed in rank:—Flying Officers W. L. Coleridge; May 22. R. G. Hart, M.C., C. N. James, H. C. Kelly; June 9. Pilot Officers A. H. Partner; May 23. A. Gillespie, W. Mellor, A. Smith; June 9. Flying Officer G. T. E. B. Dorman is transd. from Class A to Class C; June 4. Flying Officer P. D. Robins, A.F.C., is transferred from Class A to Class C; June 9.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander: A. A. Walser, M.C., D.F.C., to No. 1 Wing H.Q., India. To command. 1.10.24.

Flight Lieutenants: H. L. Nunn, D.S.C., D.F.C., to Storage Unit, Tangmere. 1.6.25. S. C. Harker, to Storage Unit, Tangmere. 1.6.25. W. J. Daddo-Langlois, to Sch. of Naval Co-operation, Lee-on-Solent. 23.6.25.

Flying Officers: R. H. Horniman, to No. 32 Sqdn., Kenley. 8.6.25. Sir R. A. St. J. Leeds, Bart., to R.A.F. Depot. 25.5.25. M. C. W. C. Flint, M.C., to Aircraft Depot, India. 7.5.25. C. J. Pooley, to No. 60 Sqdn., India. 6.5.25. W. A. Opie, to No. 31 Sqdn., India. 10.5.25. A. R. Wardle, to R.A.F. Base, Calshot. 8.6.25. C. C. Bazell, to No. 1 Stores Depot, Kidbrooke. 11.6.25. J. A. Elliott, to No. 17 Sqdn., Hawkinge. 12.6.25. D. M. Rees, M.B.E., to Storage Unit, Tangmere. 1.6.25. S. A. Lane, to No. 84 Sqdn., Iraq. 20.5.25.

Pilot Officers: W. Wynter-Morgan, to No. 60 Sqdn., India. 2.5.25. N. S. Little, to R.A.F. Depot, on transfer to Home Estab. 21.5.25. A. H. Willetts, to No. 24 Sqdn., Kenley, on appointment to a permanent commn. 16.5.25.

Stores Branch

Flight Lieutenants: P. J. Murphy and P. F. Connaughton, to R.A.F. Depot. 8.6.25. D. W. Wilson, to Stores Depot, Middle East. 19.5.25.

Flying Officers: J. C. Shakeshaft, to R.A.F. Depot. 30.5.25. W. Liniker, to Aircraft Depot, Middle East. 29.5.25. E. F. Elliott and G. W. Longstaff, to R.A.F. Depot. 8.6.25. J. E. Truss, M.C., to Storage Unit, Tangmere. 1.6.25.

Medical Branch

Wing Commander: T. S. Rippon, O.B.E. to H.Q., Special Reserve and Auxiliary Air Force. 23.5.25.

IN PARLIAMENT

R.A.F. Estimates

SIR F. SYKES, on June 9, asked the Secretary of State for Air what sums are included in the Air Estimates for 1924-25 and for 1925-26, respectively, for purely experimental and research services in connection with the development of flight; what sums are included for stores of purely war interest; and what sums are included in the same Vote for inspection of material, standard and non-standard?

SIR S. HOARE: The increase in expenditure for war purposes is in respect of increased expenditure on armament; increased contributions to War Office experimental and research establishments; and expenditure on kite balloons. The decreased provision for development of flight is due to an endeavour to secure closer estimates of probable expenditure, more particularly on experimental aircraft and engines, and does not in any way imply any diminution of effort with regard to this subject on the part of the Air Ministry.

Recruiting and University Graduates

DR. LITTLE asked the Secretary of State for Air why there does not exist, and if he will consider the advisability of instituting, a technical branch of the Royal Air Force corresponding to the Corps of Royal Engineers in the Army and to the engineering departments of the Navy, inasmuch as it is desirable to attract University graduates and other highly-trained men to seek a career in the Air Force, and inasmuch as both in the Navy and in the Army capable officers can rise to higher rank than is possible in the Air Force, where promotion stops at a grade so low as to discourage able and ambitious men from joining that force?

SIR S. HOARE: I attach very great importance to attracting University graduates and especially those who have studied engineering to enter the Royal Air Force; special advantages in the shape of antedates of seniority are given to those who do so. Officers are not accepted for employment solely on engineering duties, but after they have gained flying experience they may volunteer for specialisation as engineers. They are then available either for engineering or for general service appointments and have the opportunity to rise to the highest ranks in the service. It is not considered desirable to divorce engineering from flying experience, since an officer cannot properly maintain aircraft and engines on the ground unless he has extensive personal experience of their behaviour in the air.

Airship Development

SIR F. SYKES asked whether advisory boards have yet been set up to deal with the technical and the broader aspects of airship development; and, if so, whether he will state the constitution of these boards, and the number of meetings held by each board?

SIR S. HOARE: An Airworthiness of Airships Panel of the Aeronautical Research Committee was constituted in April, 1924, to consider certain technical questions affecting the airworthiness of airships; this panel reported in October, 1924. The only advisory board on airship development at present in existence is the Airships Co-ordinating Sub-Committee of the Aeronautical Research Committee, the composition and functions of which were announced in the Press on March 30 last. One of the chief duties of this Committee is to consider and report to the Air Council on any design, research, and experimental questions that may be referred to them, whether arising at the Royal Airships' Works or in connection with the Airship Guarantee Company's contract, as, for example, the company's proposal for a new design of mooring mast. This Sub-Committee has considered a large amount of documentary evidence, and has so far held three meetings.

The Navy Air Arm

COMMANDER BELLAIRS, on June 10, asked the First Lord of the Admiralty whether he is aware that the three strongest naval Powers in the world other than our own give to their Admiralties complete control over the provision, training and development of the air arms of the fleet and air defences, supplementing the work of their navies defending commerce; and what steps the

Admiralty are taking to remedy the present anomalous state of affairs in the British Navy?

THE FIRST LORD OF THE ADMIRALTY (MR. BRIDGEMAN): The answer to the first part of the question is in the affirmative. As regards the second part, the Admiralty are carefully watching the development of the system which was instituted by His Majesty's Government in 1923.

The Navy and Aviation Instruction

COMMANDER BELLAIRS asked the First Lord of the Admiralty whether he is aware of the decision of the United States Navy Department that all Midshipmen of the United States Naval Academy are to receive instruction in practical and theoretical aviation, so that they may qualify as pilots or observers according to their physical fitness; and whether any corresponding air training can be given under similar naval direction in this country?

MR. BRIDGEMAN: The answer to the first part of the question is in the affirmative. As regards the second part, arrangements are already in force in His Majesty's Navy, under which it will be compulsory in future for all executive officers to undergo a short course in elementary naval aeronautics in aircraft carriers during their service as midshipmen, or in some cases as junior commissioned officers. It will also be optional for all existing commissioned officers of the Military Branch and Royal Marines under a certain age to volunteer for this course.

Civil Air Service, Egypt and India

MAJOR-GENERAL SIR FREDERICK SYKES asked the Secretary of State for Air whether he is now in a position to state whether the commercial operation of the air route between Egypt, Iraq and India is now again contemplated by the Air Council; and, if so, when it is proposed to bring such a policy into effect?

SIR SAMUEL HOARE: His Majesty's Government have approved in principle the institution of a civil air service between Egypt and India. This service will replace the service at present carried out by the Royal Air Force between Egypt and Iraq at fortnightly intervals for strategic and training purposes. A concrete scheme for a service to be operated weekly each way between Kantara and Karachi is accordingly under consideration, and civil aviation undertakings have been invited to submit early proposals for such a service. As regards the last part of the question, I regard the development of this important link in our Imperial communications as a matter of urgency, and, whilst it is impossible as yet to give an exact date for its inauguration, I am most anxious that it should, if possible, come into operation during the winter of 1925-26.

Captain Brass: Will the right hon. gentleman assure the House that this new air route will not be started until we have enough landing grounds en route to make it quite safe?

SIR S. HOARE: Certainly, I have myself had an opportunity of surveying some of the landing grounds, and I can certainly give that assurance to my hon. and gallant friend.

Captain Benn: Is it the intention to grant a subsidy for this purpose?

SIR S. HOARE: Yes, a subsidy will be necessary, but it is intended that the subsidy should be found out of the savings to be made on the defence side of the Middle East question.

Royal Air Force Display

SIR H. BRITTAIN asked the Secretary of State for Air whether he can give any particulars with regard to the forthcoming Air Force display at Hendon and, approximately, the number of spectators who can be accommodated to witness this display?

SIR S. HOARE: The display, as in previous years, will consist of demonstrations of the results of the collective and individual training of the Royal Air Force, and exhibitions of flying by the winning teams in the Service competitions that are held annually. Approximately, there will be accommodation for between 70,000 and 80,000 people.

ROYAL AERONAUTICAL SOCIETY

(Official Notices)

At a meeting of Council held on June 8, 1925, Air Vice-Marshall Sir W. Sefton Brancker, K.C.B., A.F.C., was elected Chairman of Council for the period from October, 1925, to September, 1926.

A memorial to those lost in the disaster to R.38 (Z.R.2) has been placed in the Society's library, and will be unveiled on Monday, June 29, at 4 p.m., by the American Ambassador.

J. LAURENCE PRITCHARD (*Hon. Secretary*).

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The Royal Air Force Memorial Fund

The usual fortnightly meeting of the Grants Sub-Committee was held at the offices of the Royal Air Force Memorial Fund on June 11. Mr. W. S. Field was in the chair, and the other members of the committee attending were:—Mrs. L. M. K. Pratt-Barlow, O.B.E., and Sqdr.-Ldr. E. B. Beauman. The committee had before them eleven cases, and made grants amounting in all to £104 11s. The next meeting of the sub-committee was fixed for July 9 at the offices of the Fund at 2.30 p.m.

Earl of Kinnoull's Accident

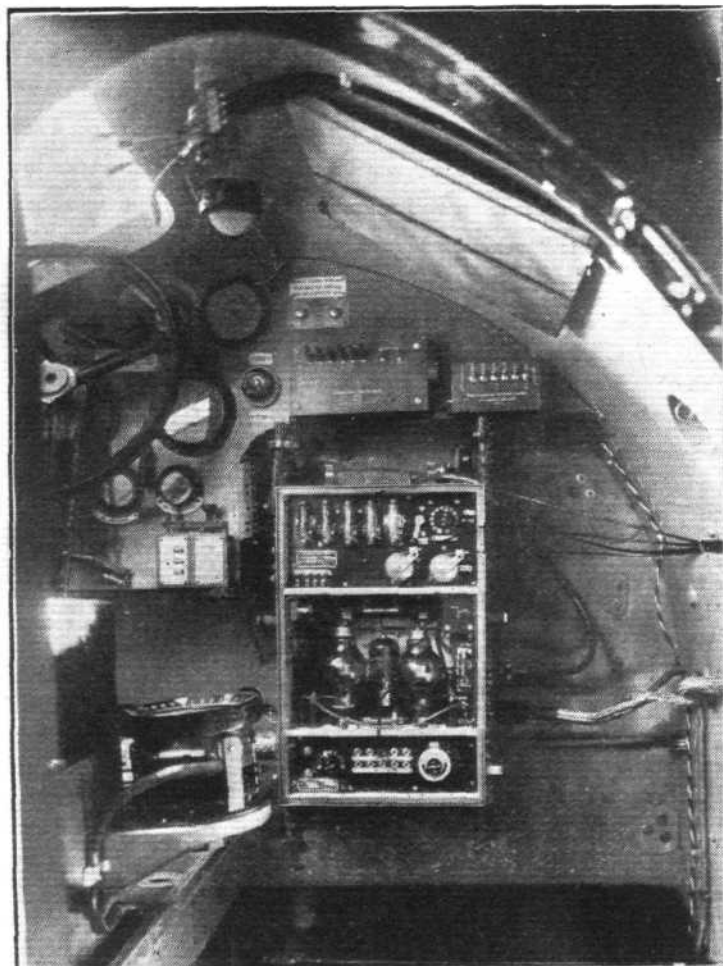
WHILE making a trial flight on a new aeroplane at Le Bourget aerodrome on June 9, the Earl of Kinnoull met with an accident in landing. He received slight injuries and was taken to hospital, but was able to leave the following day for his hotel.

German Air Service Accident

ONE of the commercial machines operated by the Junkers Company between Berlin and Dresden crashed at, or near, the latter place on June 10. The pilot and one passenger were killed and another passenger was seriously injured.

Mr. Summerfield's 2,000 Passengers

MR. S. SUMMERFIELD—the well-known "joy-flip" pilot—has, during a fortnight's stay at Rhyl, N. Wales, taken up about 2,000 passengers, which is quite good going. He will be flying at Harrogate during the King's Cup Race.



WIRELESS FOR AIRCRAFT: This photograph shows the Marconi "All Purposes" 150-watt aircraft wireless set (A.D.6) for telegraphy and telephony, as fitted in one of the Imperial Airways air liners. This is the standard wireless installation for British commercial aircraft.

IMPORTS AND EXPORTS, 1924-1925

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913 see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; for 1920, see "FLIGHT" for January 13, 1921; for 1921, see "FLIGHT" for January 19, 1922; for 1922 see "FLIGHT" for January 18, 1923; for 1923, see "FLIGHT" for January 17, 1924; and for 1924, see "FLIGHT" for January 22, 1925.

	Imports.		Exports.		Re-Exports.	
	1924.	1925.	1924.	1925.	1924.	1925.
Jan. . .	2,213	3,546	52,239	83,728	2,219	291
Feb. . .	920	985	26,349	85,639	335	20
Mar. . .	11,381	—	34,113	56,881	509	9,355
Apr. . .	373	321	56,998	78,041	6,014	6,732
May . .	3,426	560	125,138	74,844	4,162	15,278
	18,313	5,412	294,837	379,133	13,239	31,676

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PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda: No. 949 (*Ae.* 169).—The Performance of Tandem Systems, By H. Glauert. December, 1922. Price 6d. net. No. 953 (*Ae.* 172).—Experiments to Verify the Independence of the Elements of an Airscrew Blade. By C. N. H. Lock, H. Bateman, and H. C. H. Townend. November, 1924. Price 4d. net. H.M. Stationery Office, Kingsway, London, W.C. 2.

The Year-Book of Wireless Telegraphy and Telephony, 1925. Iliffe and Sons, Ltd., Dorset House, Tudor Street, London, E.C. 4.

Air Ministry Meteorological Office Geophysical Memoirs: No. 24 (*Vol. III, No. 4*).—The Distribution of Thunderstorms over the Globe. By C. E. P. Brooks, M.Sc. Price 2s. net. No. 25 (*Vol. III, No. 5*).—Surface and Geostrophic Wind Components at Deerness, Holyhead, Great Yarmouth and Scilly. By S. Nath Sen, Ph.D. Price 2s. net. No. 26 (*Vol. III, No. 6*).—Classification of Synoptic Charts for the North Atlantic for 1896-1910. By E. V. Newnham, B.Sc. Price 6s. net. H.M. Stationery Office, Kingsway, London, W.C. 2.

Moniteur Officiel du Commerce et de l'Industrie. Office National du Commerce Extérieur, 22, Avenue Victor-Emmanuel III, Paris. Price 2-50 fr.

Catalogue

Electric Warning Signals. Alfred Graham and Co., St. Andrew's Works, Crofton Park, London, S.E. 4.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924

Published June 18, 1925

- 4,288. AIRSHIP GUARANTEE CO. LTD., and C. D. BURNEY. Mooring masts and mooring gear. (234,169.)
- 4,409. H. E. S. HOLT. Loading of mail-bags, etc., on to aircraft. (234,175.)
- 4,792. L. H. DUPUIS. Aircraft. (234,186.)
- 5,919. E. A. D. ELDRIDGE. Supercharging. (234,215.)
- 10,273. FAIREY AVIATION CO., LTD., and F. DUNCANSON. Radiators. (234,253.)
- 12,142. SPERRY GYROSCOPE CO. Gyroscopic apparatus. (216,156.)
- 13,325. RAILLESS, LTD., A. E. SHORT, H. O. SHORT and E. M. MUNRO. Overhead electric conductors. (234,287.)
- 14,516. DOUGLAS MOTORS, LTD., and S. L. BAILEY. Oil-pumps. (234,299.)

FLIGHT

The Aircraft Engineer and Airships

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